

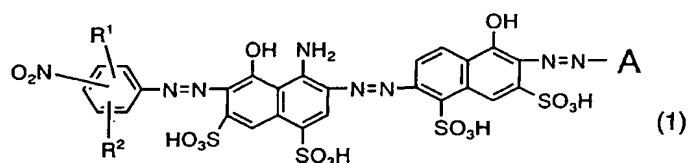
Industrial Applicability

[0136]

An ink composition containing a trisazo compound according to the present invention is used for dyeing and coloring of paper or cloth as a black ink liquid for ink-jet recording and writing tools.

Claims

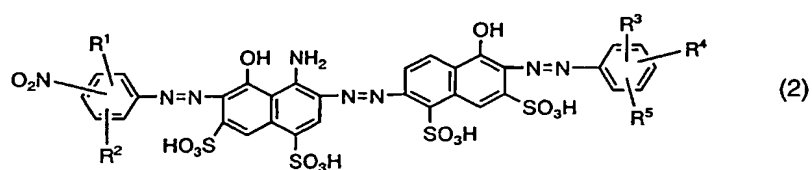
[1] A trisazo compound represented by Formula (1) as shown below or a salt thereof;



(wherein, each of R¹ and R² independently represents a hydrogen atom; a halogen atom; a cyano group; a carboxyl group; a sulfo group; a sulfamoyl group; an N-alkylaminosulfonyl group; an N-phenylaminosulfonyl group; a phosphoric acid group; a nitro group; an acyl group; a ureide group; a (C1 to C4) alkyl group which may be substituted with a hydroxy group or a (C1 to C4) alkoxy group; a hydroxy group; a (C1 to C4) alkoxy group; a (C1 to C4) alkoxy group which may be substituted with a sulfo group or a carboxyl group; or an acylamino group: A represents a phenyl group or a naphthyl group (wherein, these phenyl group and naphthyl group may be substituted with a halogen atom; a cyano group; a carboxyl group; a sulfo group; a sulfamoyl group which may be substituted with an alkyl group

or a phenyl group; a phosphoric acid group; a nitro group; an acyl group; a ureide group; a (C1 to C4) alkyl group which may be substituted with a hydroxy group or a (C1 to C4) alkoxy group; a hydroxy group; a (C1 to C4) alkoxy group; a (C1 to C4) alkoxy group which may be substituted with a sulfo group or a carboxyl group; or an acylamino group.))

[2] The trisazo compound or a salt thereof according to Claim 1, wherein Formula (1) is represented by Formula (2) as shown below;

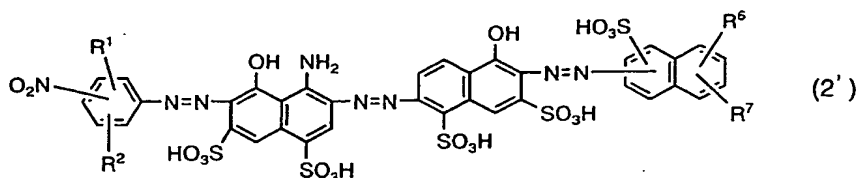


(wherein, R¹ represents a carboxyl group, a sulfo group, or a (C1 to C4) alkoxy group, R² represents a hydrogen atom or a sulfo group, R³ represents a carboxyl group, a sulfo group, or a (C1 to C4) alkoxy group, R⁴ represents a hydrogen atom, halogen atom, a carboxyl group, a sulfo group, a nitro group, a (C1 to C4) alkoxy group, a sulfamoyl group or an N-(C1 to C4) alkyl amino sulfonyl group, and R⁵ represents a hydrogen atom, a carboxyl group or a sulfo group, respectively.)

[3] The trisazo compound or a salt thereof according to Claim 2, wherein in Formula (2), R¹ is bonded at the 2-position of an azo group, a nitro group is bonded at the 4-position, R⁵ is bonded at the 5-position, R³ is bonded at the 2-position of an azo group, R⁴ is bonded at the 4-position and R⁵ is bonded at the 5- or 6-position.

[4] The trisazo compound or a salt thereof according to Claim 3, wherein in Formula (2), R³ is a carboxyl group or a sulfo group, R⁴ is a carboxyl group, a sulfo group, a sulfamoyl group, an N-(C1 to C4) alkylaminosulfonyl group, a nitro group or a (C1 to C4) alkoxy group, R⁵ is a hydrogen atom or a carboxyl group, R³ is bonded at the 2-position of an azo group, R⁴ is bonded at the 4-position and R⁵ is bonded at the 5-position.

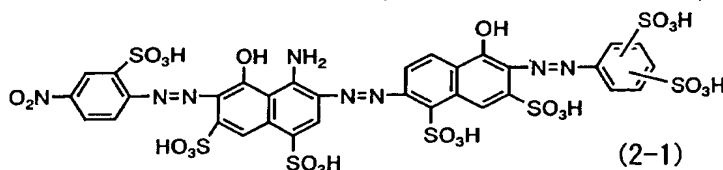
[5] The trisazo compound or the salt thereof according to Claim 1, wherein Formula (1) is represented by Formula (2') as shown bellow;



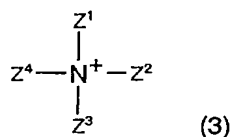
(wherein R¹ represents a carboxyl group or a sulfo group, R² represents a hydrogen atom, R⁶ represents a sulfo group or a nitro group, and R⁷ represents a hydrogen atom or a sulfo group, respectively.)

[6] The trisazo compound or the salt thereof according to Claim 5, wherein in Formula (2'), R¹ is bonded at the 2-position of an azo group, a nitro group on a phenyl group is bonded at the 4-position, for a naphthyl group substituted with R⁶ or R⁷, an azo group is bonded at the 1- or 2-position of a naphthyl group, R⁶ is bonded at the 5- or 6- position, and R⁷ is bonded at the 7- or 8-position.

[7] The trisazo compound represented by Formula (2-1) as shown bellow or a salt thereof;



[8] The salt of the trisazo compound according to any one of Claims 1 to 7, wherein the salt is a lithium salt, a sodium salt, a potassium salt, an ammonium salt, or an ammonium salt represented by a general Formula (3);



(wherein, each of Z¹, Z², Z³, and Z⁴ independently represents a hydrogen atom, an alkyl group, a hydroxyalkyl group or a hydroxyalkoxyalkyl group.)

[9] An ink composition characterized by comprising at least one of the trisazo compound or the salt thereof according to any one of Claims 1 to 8.

[10] An ink-jet printer equipped with a container containing the ink composition according to Claim 9.

[11] A recording method of ink-jet printing using the ink composition according to Claim 9.

[12] A recording method of ink-jet printing, wherein a record-receiving material for a method of ink-jet printing according to Claim 11 is an information transmission sheet.

[13] The recording method of ink-jet printing according to Claim 12, characterized by an information transmission sheet which comprises a porous white inorganic matter.

[14] A colored object colored by the trisazo compound or the salt thereof according to any one of Claims 1 to 8.